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(71) Applicant(s) Mary Ilett Smith's Cottage, Lower South Park, SOUTH GODSTONE, Surrey, RH9 8LF, United Kingdom	(56) Documents Cited GB 2150834 A GB 2046577 A GB 1581430 A GB 1548022 A GB 0903370 A EP 0093262 A1 WPI Abstract Accession No 94-199910/24 & WO 9412142 A1
(72) Inventor(s) Mary Ilett	(58) Field of Search UK CL (Edition N ) A1M MAD , A5E ES INT CL <sup>6</sup> A01K 1/00 Online: WPI
(74) Agent and/or Address for Service Brookes & Martin High Holborn House, 52-54 High Holborn, LONDON, WC1V 6SE, United Kingdom	

## (54) Animal and insect control using a bubble-pack type substrate

(57) The present invention is concerned with the control of animals, insects and other creatures and their habits. There is described a substrate comprising a plurality of discrete pockets or bubbles (11) which contain either (i) a composition for deterring an animal from chewing, biting or sucking upon a surface upon which the substrate is applied; (ii) a toxic composition; (iii) composition for prevention of pest infestation; or (iv) a medicament for animals, birds or insects. There is also described a method of controlling an animal chewing, biting or sucking at a surface, the method comprising applying a substrate comprising a plurality of discrete pockets or bubbles to the surface and a further method of controlling an animal chewing, biting or sucking at a surface, the method comprising applying a substrate having a non-absorbent layer to the surface, and coating the substrate with a composition appropriate to the nature of animal control.

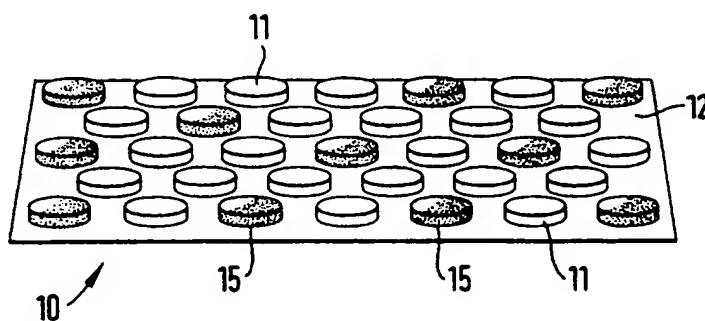
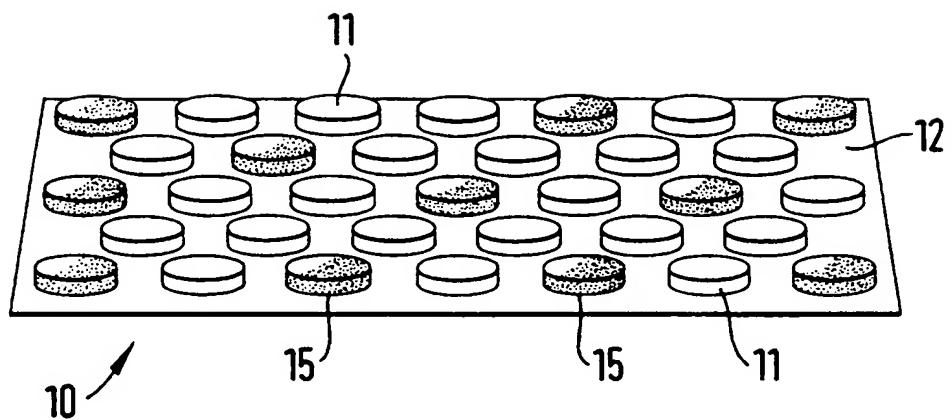


Fig. 1

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*Fig. 1*

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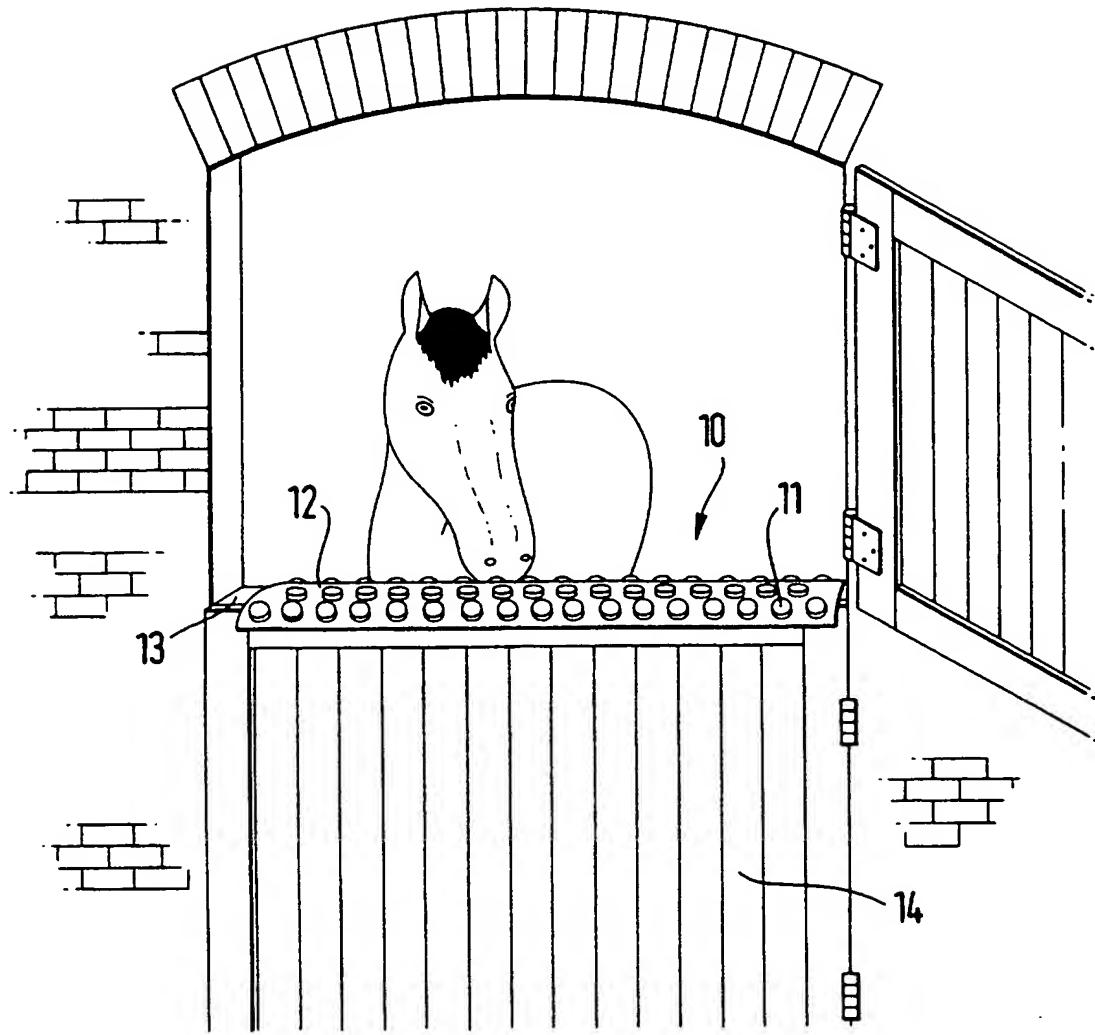


Fig. 2

ANIMAL AND INSECT CONTROL

The present invention is concerned with the control of animals, insects and other creatures and their habits.

In its broadest sense, in one aspect the present invention provides a substrate comprising a plurality of discrete pockets or bubbles which contain a composition appropriate to the nature of the animal control required.

Many horses if confined in a stable for long periods of time, begin to chew surfaces in the stable, often simply through boredom. This chewing can develop into a habit known as crib-biting where the horse bites into the top of the stable door or manger and sucks in air. Crib-biting can develop into a serious problem affecting the horse's health and value. Livery yards are often unwilling to accept such animals into their stables as often other, otherwise unaffected, horses begin to copy "cribbers". Often foals learn to crib from their dams or it is thought that the habit may be hereditary. Horses are also known to chew their own and other horses' rugs.

The most effective way known to date to combat crib-biting is to spread a greasy, foul-tasting composition along all the surfaces. However it is difficult to avoid skin contact with the product - both the horse's skin and that of those working in the stable. Furthermore, it has been known for horses to wipe the composition from the coated surfaces onto their necks and then begin crib-biting again. Clearly such a treatment is

not wholly acceptable for protecting fabrics, such as horse rugs, from being chewed as the fabric tends to become rather coated with the composition.

Similar problems occur with many other animals.

Accordingly, there is a need to provide an improved means of inhibiting horses and other animals from crib-biting or corresponding disorders.

According to a first aspect of the present invention there is provided a substrate comprising a plurality of discrete pockets or bubbles which contain a composition for deterring animals from chewing, biting or sucking at a surface upon which the substrate is applied.

This aspect of the present invention has been found to be so effective that a placebo-type arrangement of an substrate comprising a plurality of un-filled pockets or bubbles can, following use of the filled embodiment, be equally effective. Such a substrate is also a feature of the present invention. Accordingly, the present invention includes the use of a substrate comprising a plurality of discrete pockets or bubbles as a deterrent against animals chewing, biting or sucking at a surface to which the substrate may be applied.

Furthermore, it has been found that crib-biting can be inhibited simply by providing a non-absorbent substrate upon the surface to be treated and then coating a deterrent composition over the non-absorbent substrate. The substrate may comprise a sheet

material or may be achieved in situ by painting an appropriate composition onto the surface.

The invention can be extended to other forms of control of animal behaviour, for example in pest and vermin control. Presently, eradicating or generally reducing the population of a particular pest or vermin by poisoning involves the risk of poisoning other, possibly beneficial, animals as there is often no external containment for the poison. Where the poison is not contained, it is easily washed away in rainstorms or powdered poisons are blown away by the wind. The supply of poison needs to be checked regularly and often the services of professionals are required to handle the toxic compounds involved.

Accordingly, in a further aspect of the present invention, for eradication of pests or vermin, whether animals, birds or insects, the pockets or bubbles of a substrate are filled with a poison (or a contraceptive composition where complete eradication of the pest or vermin is not necessary).

Furthermore, the present invention can be used in the treatment of animals, especially animals in the wild, by providing in the pockets or bubbles a medicament such as a vaccine.

Typically, the substrate of the various aspects of the present invention is formed from a frangible material, typically a plastics material.

The above and other aspects of the present invention will now be described in further detail, by way of example only, with reference to the accompanying drawings in which:

Figure 1 illustrates a first embodiment of the present invention; and

Figure 2 illustrates the embodiment of Figure 1 in a typical installation.

An embodiment of the substrate in accordance with the present invention is shown generally at 10. The substrate comprises a plurality of pockets or bubbles 11 on a support sheet 12. The basic structure is similar to packing material known for protecting objects during transit, for insulating greenhouses or as an insulating cover for swimming pools.

Pockets or bubbles 11 are filled (or partially filled) with an appropriate composition 15 as a step during manufacture or at a later stage by injection into the bubbles 11. The composition 15 is preferably in the form of a viscous liquid although solids, pastes and fluids may all equally be suitable depending upon the particular purpose of the invention. For example, to inhibit crib-biting, many suitable compositions are well known in the art, such as those according to GB 1000719 or CA 2070864 or that sold by Hydrophane Laboratories under the trade name CRIBOX.

Figure 2 shows a typical use of the arrangement of the present invention to inhibit crib-biting. The substrate 10 comprising composition filled bubbles 11 on a support sheet

12 is affixed, for example by stapling, gluing, by means of adhesive tape or an adhesive layer which may be applied to the substrate during manufacture), to the upper surface 13 of a stable door 14, or any other surface which the animal is known to chew.

It has been found that horses dislike the texture of substrate itself even before filling and so not all of the bubbles 11 of the substrate need be filled with the deterrent composition. If however, the animal does bite into the substrate 10 a number of the bubbles 11 will burst releasing the unpalatable substance into the animals mouth. Thus the horse will be deterred from again biting onto the stable door.

In some cases, it may be found that once a horse has experienced the unpleasantness of the composition delivered by the substrate of the present invention, the mere sight or feel of the texture of the substrate may act as a sufficient deterrent. In such cases, the substrate need not have any filled pockets or bubbles.

The arrangement of the present invention is equally applicable to inhibiting other confined animals from crib-biting or similar conditions. However, different deterrent compositions may be required for different species.

In the further aspect of the present invention, to control the population of vermin and other pests, the pockets or bubbles of the present invention can be filled with a suitable efficacious toxic substance. The pockets or bubbles can be filled with a contraceptive or other hormonal composition to control animal populations without actually killing the

animal. The present invention can also be used as a means of administering other drugs, such as vaccines, to an animal.

In these situations where it is positively desirable for the animal to chew or bite into the substrate of the present invention such as for administering poisons or medicaments, preferably all of the pockets or bubbles of the substrate are filled with the composition. Furthermore, preferably the outer surface of the substrate is coated with a composition which could actually encourage the creature to chew on the substrate. The coating composition will preferably attract the animal by smell or visually but it may be desirable for the coating composition not to have an appealing taste in order to prevent the animal ingesting an overdose of the poison, contraceptive or medicament.

By containing the composition in comparatively small quantities in closed pockets the present invention provides a method of deterring or inhibiting animals from sucking, chewing or biting surfaces which is cleaner both for the animal and for those looking after the animal, than methods known hitherto. For pest or vermin control, the invention allows the bait to be laid without risking the safety of the user through contact with the toxic composition.

The invention can also be appropriate to time-delay dose applications, relating, for example, to termite control, the prevention of infestation and so on. In an alternative embodiment (not shown) the composition-filled substrate is perforated on one side and a release layer is applied to that side. In use, the release layer is removed and the

substrate applied to a surface (such as a roof timber). The perforated side of the substrate is advantageously provided with an adhesive coating for this purpose. The composition will then seep out into the surface. The composition typically comprises compounds for treating existing infestations or for preventing future infestations. There may be several sizes of perforation in the substrate to allow for a substantially uniform flow of the composition into or onto the surface over a period of time, thereby increasing the degree of protection afforded by the substrate.

The base substrate having pockets or bubbles will typically be of a conventional material such as plastics materials or metallised plastic or metallic films. The chemical properties of the composition with which the pockets or bubbles will be filled will, to a certain extent, dictate which materials for the substrate are or are not suitable. Under certain conditions of use, the material will preferably be permeable or semi-permeable, in other cases it will be non-permeable. In particular, fluid permeable materials may be suitable for administering poisons or medicaments, as the animal to be killed/treated does not then need to actually bite into the substrate - it can receive the effective composition simply by licking or brushing against the substrate.

If the composition is injected into the substrate, a small hole will remain in the pocket or bubble. Under normal conditions, this will be held closed by the elasticity of the material from which the substrate is manufactured. However, when pressure is applied, such as by a horse biting onto the substrate, the composition will be released through the hole. Thus it will not always be necessary for the material from which the substrate

is made to be frangible. If the material does not have sufficient elasticity, a frangible material (that is one which can be punctured by the creature against which the use of the composition containing substrate is intended) may be preferred.

As herein described, an embodiment of the invention has a generally sheet-like form. The sheet can preferably be cut easily to allow for application of the substrate to a wide variety of surfaces.

In an alternative embodiment the pockets or bubbles contain a mosquito or other flying insect repellent. Each pocket or bubble can be burst individually by the user to provide relief. The substrate can be cut as required such that a user can be provided with a single dose bubble for use as and when needed.

In testing it has further been found that a deterrent effect is achieved by applying a non-absorbent tape to the top of a stable door and coating the tape with a conventional deterrent composition such as Derby Chewstop. The non-absorbent tape prevents seepage of the deterrent composition into the wood where it has little effect. Other non-absorbent materials will be equally appropriate. Furthermore, the non-absorbent material or tape can be covered with an absorbent or porous material such as a foam or sponge in a layer such as discrete elements, to retain a greater amount of the deterrent composition. Clearly this also is suitable for other forms of controlling animal behaviour, such as applying poisons, to absorbent surfaces.

The present invention can be used to discourage animals from damaging areas of habitat, be they in the wild or in captivity. There are numerous situations in which various embodiments of the present invention may be used - in industry, in the home, in rural situations. Many alternatives will be readily apparent to users of the invention.

**Claims.**

1. A substrate comprising a plurality of discrete pockets or bubbles which contain:
  - (i) a composition for deterring an animal from chewing, biting or sucking upon a surface upon which the substrate is applied;
  - (ii) a toxic composition;
  - (iii) composition for prevention of pest infestation; or
  - (iv) a medicament for animals, birds or insects.
2. A substrate as claimed in Claim 1 wherein the substrate is formed of a frangible material.
3. A substrate as claimed in Claim 1 or Claim 2 formed of a plastics material.
4. A substrate as claimed in any one of Claims 1 to 3 wherein an adhesive layer is applied to one surface of the substrate.
5. A substrate as claimed in any preceding claim, wherein the composition is a viscous fluid or paste.
6. The use of a substrate comprising a plurality of pockets or bubbles, in the deterring of an animal from biting, chewing or sucking upon a surface upon which the substrate may be applied.
7. A method of controlling an animal chewing biting or sucking at a surface, the method comprising applying a substrate comprising a plurality of discrete pockets or bubbles to the surface.

8. A method as claimed in Claim 7 wherein the substrate is as claimed in any one of Claims 1 to 5.

9. A method of controlling an animal chewing, biting or sucking at a surface, the method comprising applying a substrate having a non-absorbent layer to the surface, and coating the substrate with a composition appropriate to the nature of animal control.

10. A method as claimed in Claim 9 wherein the substrate has an absorbent or porous layer on an upper or outer facing, in use, surface.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**(The Search report)**

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**Application number**  
**GB 9520093.7**

<b>Relevant Technical Fields</b>		Search Examiner S J QUICK
(i) UK Cl (Ed.N)      A1M (MAD); A5E (ES)		
(ii) Int Cl (Ed.6)      A01K 1/00		Date of completion of Search <b>4 DECEMBER 1995</b>
<b>Databases (see below)</b>		Documents considered relevant following a search in respect of Claims :- 1-8
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.		
(ii) ONLINE: WPI		

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Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2150834 A	(FUMAKILLA) see especially pages 2 (lines 7-9) and 4 (line 44 ff) and Figures 4 and 5	1-8
X	GB 2046577 A	(DR WERNER FREYBERG CHEMISCHE FABRIK) see especially page 2 (line 110 ff) and Figures 1-4	1-8
X	GB 1581430 A	(RISDON MFG) see especially pages 1 (lines 21-25) and 5 (lines 46-55) and Figure 4	1-8
X	GB 1548022 A	(JOHN WYETH & BRO) see especially pages 1 (lines 25-37) and 3 (lines 33-68 and 73-80)	1-8
X	GB 0903370 A	(E BOEHRINGER ET AL) see especially pages 2 (lines 124-130) and 3 (lines 1-13) and Figure 3	1-8
X	EP 0093262 A1	(ST HYMAN) see especially page 1 (lines 14-17) and Figure 1	1-8

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X	WPI Abstract Accession No 94-199910/24 & WO 9412142 A1 (R P SCHERER LTD ET AL) see Abstract	1-8